CHEMICAL & FERTILIZER CORPORATION

MATERIAL SAFETY DATA SHEET

IDENTITY

NU-FILM-IR®

Section I

Manufacturer's Name	Emergency Telephone Number
MILLER CHEMICAL & FERTILIZER CORP.	**CHEMTREC: 1-800-424-9300 717-632-8921**
Address	Telephone Number for Information
P.O. BOX 333, 120 RADIO ROAD **HANOVER, PA 17331 U.S.A.**	**717-632-8921 FAX: 717-632-4581** Date Prepared **1/1/01**

Section II - Hazardous Ingredients/Identity Information

NAME	*CAS #*	*OSHA PEL*	*ACGIH TLV*	*OTHER LIMITS RECOMMENDED*
THIS PRODUCT HAS BEEN TESTED AS A WHOLE TO DETERMINE IT'S HAZARDS	NA	ND	ND	245mg/m3

Recommended NFPA Rating: **HEALTH: NE** **FIRE: NE** **REACTIVITY: NE**

THE NFPA RATING HAS NOT BEEN ESTABLISHED FOR THIS PRODUCT

PA Right-to-Know: This product contains proprietary ingredients.

This product contains the following chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372 (the corresponding CAS number and typical percent by weights are also provided).

NONE

Section III - Physical/Chemical Characteristics

Percent Volatile	No data available	Specific Gravity (H20=1)	0.93-0.95 @ 20c
Vapor Pressure (mm Hg @ 25c)	No data available	Melting Point	NA
Vapor Density (AIR=1)	No data available	Evaporation Rate (Butyl Acetate=1)	ND
Solubility in Water	EMULSIFIABLE	pH	NA
Appearance and Odor	YELLOW/AMBER to RED LIQUID: MODERATE ODOR		

Section IV - Fire and Explosion Hazard Data

Flash Point	>100 c TCC	Flammable Limits	ND	LEL	ND	UEL	ND
Extinguishing Media	FOAM, CARBON DIOXIDE, DRY CHEMICAL, WATERSPRAY OR SAND/EARTH						
Special Fire Fighting Procedures	USE WATER SPRAY TO KEEP FIRE-EXPOSED CONTAINERS COOL.USE SUPPLIED AIR BREATHING APPARATUS EQUIPMENT. USE WATER SPRAY TO DISPERSE VAPORS.						
Unusual Fire and Explosion Hazards	EVACUATE PEOPLE DOWNWIND FROM FIRE. CONTROL RUNOFF WATER.						

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid	EXCESSIVE HEAT, SOURCES OF IGNITION, STRONG OXIDIZERS.
	Stable	X		
Incompatibility(materials to avoid)	STRONG OXIDIZERS			
Hazardous Decomposition or Byproducts	OXIDES OF CARBON UNDER FIRE CONDITIONS			
Hazardous Polymerization	May Occur		Conditions to Avoid	NONE KNOWN
	Will Not Occur	X		

NA - Not Available or Not Applicable
ND - Not Determined

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	YES	Skin?	YES	Ingestion?	YES	
Health Hazards (Acute and Chronic)	ORAL TOXICITY: RATS >5000 mg/kg. Practically non-toxic.						
DERMAL TOXICITY RATS >2000 mg/kg	INHALATION TOXICITY: LC50 >2460 mg/m^3						
ACUTE TOXICOLOGICAL PROPERTIES:NONE							
THIS PRODUCT MAY CAUSE SLIGHT EYE IRRITATION							
THIS PRODUCT MAY CAUSE MILD EYE, SKIN AND THROAT IRRITATION							
CHRONIC: NO DATA AVAILABLE							
Carcinogenicity:	NTP?	NO	IARC Monographs?	NO	OSHA Regulated?	NO	
Signs and Symptoms of Exposure	NO DATA AVAILABLE						
Medical Conditions Generally Aggravated by Exposure	CONTACT MAY CAUSE IRRITATION						
Emergency and First Aid Procedures	**INGESTION:** DO NOT INDUCE VOMITING, CALL A PHYSICIAN.						
EYES:	IRRIGATE WITH WATER FOR AT LEAST 15 MINUTES, SEEK MEDICAL ATTENTION.						
SKIN:	REMOVE ANY CONTAMINATED CLOTHING AND WASH SKIN WITH SOAP AND WATER.						
INHALATION:	REMOVE VICTIM TO FRESH AIR, CALL A PHYSICIAN						

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled	ELIMINATE ALL SOURCES OF IGNITION. DIKE OR IMPOUND TO KEEP PRODUCT OUT OF SEWERS AND WATERCOURSES. ABSORB SPILL WITH INERT MATERIAL, SHOVEL INTO WASTE CONTAINERS. WASH AREA WITH WATER. ABSORB WATER WITH INERT MATERIAL. CONTINUE THIS PROCEDURE UNTIL NO ODOR REMAINS.
Waste Disposal Method	DISPOSE OF WASTE AND WASTE CONTAINERS IN ACCORDANCE WITH LOCAL/STATE/FEDERAL REGULATIONS.
Precautions to be Taken in Handling and Storing	KEEP CONTAINERS CLOSED WHEN NOT IN USE. KEEP FROM SOURCES OF IGNITION. DO NOT CONTAMINATE WATER, FOOD, FEED BY STORAGE OR DISPOSAL. FOLLOW GOOD INDUSTRIAL HYGIENE PRACTICES. STORE BETWEEN 40.5 F AND 120.5 F.
Other Precautions	KEEP FROM CHILDREN AND ANIMALS. AFTER WORKING WITH THIS PRODUCT, THOROUGHLY CLEAN EQUIPMENT. WASH THOROUGHLY, CHANGE CLOTHING, AND CLEAN PROTECTIVE GEAR.

Section VIII - Control Measures

Respiratory Protection	A RESPIRATOR APPROVED BY NIOSH/MSHA SHOULD BE WORN WHERE VAPOR INHALATION COULD OCCUR.				
Ventilation	Local Exhaust	NA	Special	NA	
	Mechanical	PREFERRED	Other	NA	
Protective Gloves	CHEMICAL RESISTANT (e.g. rubber)		Eye protection	CHEMICAL SPLASH GOGGLES	
Other Protective Clothing or Equipment	CHEMICAL RESISTANT APRON, CLEAN BODY-COVERING CLOTHING, BOOTS, HAT				
Work/Hygienic Practices	PREVENT EATING, DRINKING, TOBACCO USAGE AND COSMETIC APPLICATION TO PREVENT EXPOSURE.				

THE SUBMISSION OF THIS MSDS MAY BE REQUIRED BY LAW BUT THIS IS NOT AN ASSERTION THAT THIS SUBSTANCE IS HAZARDOUS WHEN USED IN ACCORDANCE WITH PROPER SAFETY PRACTICES AND NORMAL HANDLING PROCEDURES.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

NA - Not Available or Not Applicable
ND - Not Determined

NU-FILM®-IR

SOFT-FILM®
NON-IONIC
STICKER - SPREADER

For use only with herbicides designed for application on Rights-Of-Way, Non-Crop Areas, Ditch Banks, Industrial Sites and in Forestry Programs.

PRINCIPAL FUNCTIONING AGENT:
Poly-1-p-Menthene 96%
INERT INGREDIENTS: 4%

EPA Reg. No.-Exempt EPA Est. No. 72-PA-1

*The amount of active ingredient in the formulation does not determine the activity. Activity is governed by the type of film which is formed and this is determined by refinement. The active ingredient in this product is Pinolene®, a terpenic polymer.

SPECIMEN LABEL

CAUTION
KEEP OUT OF REACH OF CHILDREN

Manufactured by
MILLER CHEMICAL & FERTILIZER CORPORATION
P.O. BOX 333
HANOVER, PENNSYLVANIA 17331, U.S.A.

NET CONTENTS: 2½ GALLONS LIQUID

GENERAL INFORMATION

NU-FILM-IR is a superior STICKING agent designed for use with industrial herbicides usually eliminating the need for conventional surfactants. It is compatible in the spray tank with all commercially used products. **NU-FILM-IR** forms a sticky, elastic film which tenaciously holds the herbicide on the plant foliage and greatly reduces rainfall erosion of the spray residue, thus insuring that pesticide sprays are not lost shortly after application. **NU-FILM-IR** reduces the effect of ultra-violet (UV) degradation of herbicides. The film allows the herbicide to feed into the foliage slowly, reducing quick foliage burning which inhibits translocating herbicide activity. This is a major advantage of the **NU-FILM-IR** polymer over surfactant type herbicide activators, which increase burn down, but reduce long term weed and brush control. **NU-FILM-IR** will not foam, freeze or clog nozzles. It has been proven effective when applied by any aircraft or ground sprayer. It improves the initial pesticide deposit and allows excellent re-distribution of aircraft and concentrate sprayer deposits, to give complete coverage. **NU-FILM-IR** may be applied by ground controlled droplet or aerial spray equipment.

Apply sprays containing **NU-FILM-IR** during daylight. Sunlight, direct or indirect is needed to set the film. **NU-FILM-IR** can be applied when light dew is present or prior to rain events or to post-event wet vegetation. However, avoid applying to vegetation when excessive moisture is present (i.e. dripping).

DIRECTIONS

BRUSH CONTROL–To increase the efficiency and provide wash-off protection of Brush Control Herbicides, add **NU-FILM-IR** to the spray mix as follows:

Ground Application To Foliage

High Volume: 8 to 16 ounces **NU-FILM-IR** per 100 gallons of water (240 cc to 480 cc per 400 liters).

Low Volume Concentrate–Back Pack: 1 to 2 ounces **NU-FILM-IR** per 5 gallons of water (30 cc to 60 cc per 20 liters).

Aerial and RadiArc® Application: More than 25 gallons, but less than 100 gallons of spray mix per acre (960 liters per hectare): Use **NU-FILM-IR** at 8 to 16 ounces per 100 gallons of water. If using glyphosate products: Use **NU-FILM-IR** at 12 to 16 ounces per 100 gallons of water. When application rates are less than 25 gallons per acre use **NU-FILM-IR** at 4 to 6 ounces per acre. (300 to 450 cc per hectare).

DORMANT STEM APPLICATIONS–To improve the movement of herbicides into the tissue of dormant stems, apply 16 ounces **NU-FILM-IR** per 100 gallons of water. Such applications should be made according to the herbicide labels used and should be applied primarily to one and two year old new growth, or those stems less than two inches in diameter.

RIGHTS-OF-WAY AND INDUSTRIAL VEGETATION CONTROL SITES– To improve the efficiency of and provide wash-off protection for selective weed control along roadsides, pipelines, tank dikes, ditch banks, along fences and on other non-crop areas: Use **NU-FILM-IR** with approved herbicides at the rate of 8 to 16 ounces per 100 gallons of water.

To improve the efficiency of and provide wash-off protection for non-selective weed control programs, use **NU-FILM-IR** at 8 to 16 ounces per 100 gallons of water with post-emergence herbicides such as Vanquish® and RoundUp®. **NU-FILM-IR** can also be used when post-emergence herbicides are tank mixed with pre-emergence herbicides.

FORESTRY USES–To increase the efficiency of and provide wash-off protection for herbicides used in forestry site preparation, use **NU-FILM-IR** with herbicides such as, but not limited to Accord®, Arsenal®, Garlon®, Velpar®, at the rate of 4 to 6 ounces per acre (300 to 450 cc per hectare), when application rates are less than 25 gallons per acre. When higher volumes are applied, use at 8 to 16 ounces per 100 gallons of water.

Plant Growth Regulator Treatments for grass growth control and seed head suppression — To improve the efficiency of plant growth regulator products such as Arsenal®, Embark® and Telar®, add **NU-FILM-IR** to the spray mix at the rate of 6 to 8 ounces per acre (450 cc to 600 cc per hectare).

Brush Control with Krenite® — To increase the efficiency of Krenite® brush control applications, apply **NU-FILM-IR** at 16 ounces per 100 gallons (240 cc to 350 cc per 400 liters) in high volume ground applications. For aircraft applications of Krenite® use **NU-FILM-IR** at the rate of 4 to 6 ounces per acre (300 to 450 cc per hectare).

Bare Ground Applications — To stabilize, improve performance, provide wash-off protection and retard photo-degradation of Oust® and other herbicides used in control of vegetation on industrial sites and along railroad and highway rights-of-way. Apply 16 to 24 ounces of **NU-FILM-IR** per acre (1.2 liter per hectare).

Add **NU-FILM-IR** to the spray tank as it is filling, with the agitator running. To insure good emulsification of this product, it is advisable to pre-mix **NU-FILM-IR** with water before adding to the spray tank.

NOTE: In some glyphosate applications, it may be necessary to add some additional non-ionic surfactant, based on your past experience and especially in low volume applications.

Rinse tank, lines and nozzles immediately after spraying, with water. After rinsing, there may still be a small amount of sticky residue in the tank. This will help to prevent rusting and corrosion. It will not clog nozzles when sprayer is next used. If spray happens to land on undesired surfaces, such as windows, cars, application equipment or others, it can be removed with soap and water, before the spray deposit is dry or with premium grade or white kerosene after the film has dried or set. To remove dried deposits from painted car surfaces, use standard tar remover products designed for use on painted car finishes.

ENVIRONMENTAL PRECAUTION: Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

STORAGE and DISPOSAL: Do not contaminate water, food, or feed by storage or disposal.

Use this product in accordance with good agronomic practices, which include utilizing proven spray equipment set for proper coverage. Do not make applications when temperatures are too hot. Applications should be made at temperature levels and when other environmental conditions in your area are such that your experience indicates the application will be compatible and will accomplish the desired result.

The use of this material being beyond our control and involving elements of risk to human beings, animals and vegetation, we do not make any warranty, express or implied, as to the effects of such use, when this product is not used in accordance with the directions as stated on this label.

Accord® - Reg. trademark of Dow-Agro Sciences
Arsenal® – Reg. trademark of BASF Corp.
Embark® – Reg. trademark of P.B.I. Gordon
Garlon® – Reg. trademark of Dow-Agro Sciences
Krenite® – Reg. trademark of E.I. DuPont de Nemours & Co.
Oust® - Reg. trademark of E.I. DuPont de Nemours & Co.
RadiArc® – Reg. trademark of Waldaum Specialties, Inc.
Round Up® – Reg. trademark of Monsanto
Telar® – Reg. trademark of E. I. DuPont de Nemours & Co.
Vanquish® - Reg. trademark of Syngenta Crop Protection
Velpar® – Reg. trademark of E.I. DuPont de Nemours & Co.

6/02M2MP

Batch No.

METRIC CONVERSION

1 Pt. Per Acre = 1.2 Liters Per Hectare
100 Gallons (U.S.) = 378.5 Liters
1 Hectare = 2.5 Acres (U.S.)
1 cc = 1 Milliter (ml)